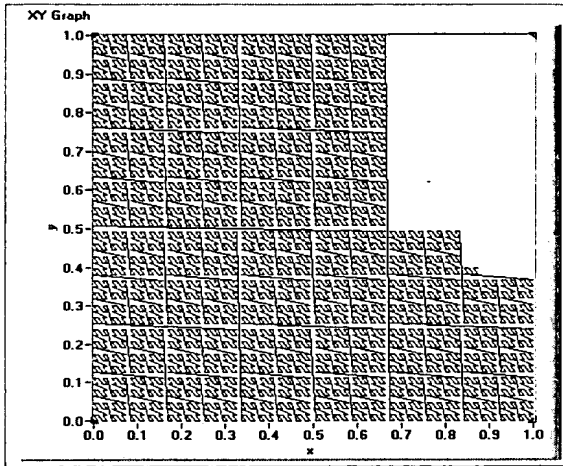
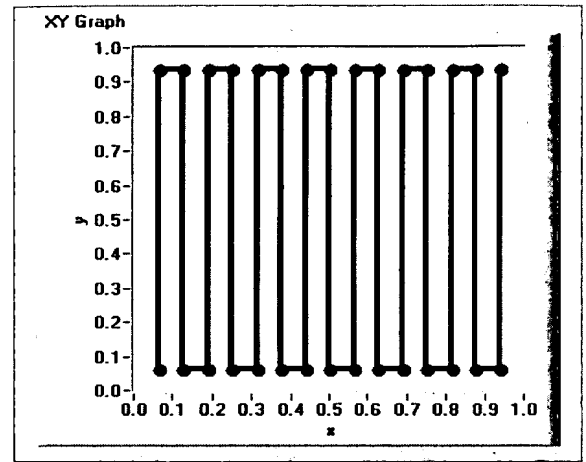


09876543210987654321



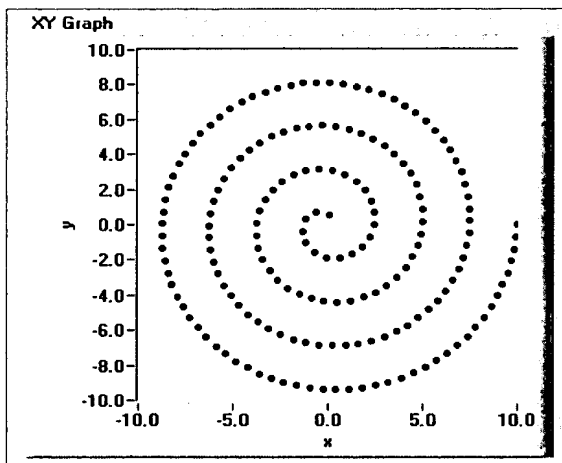
Approximated Peano Curve. The space-filling process has not been completed.

Figure 1A (Prior Art)



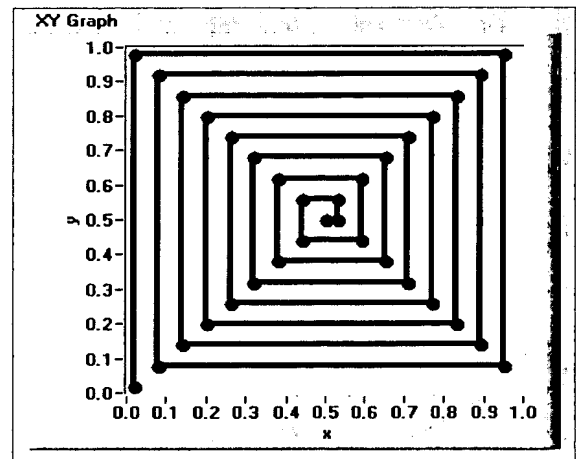
### Boustrophedon Path

Figure 1B (Prior Art)



### Archimedes Spiral defined by equally distributed points

Figure 1C (Prior Art)



### Spiral-like line-based scanning

Figure 1D (Prior Art)

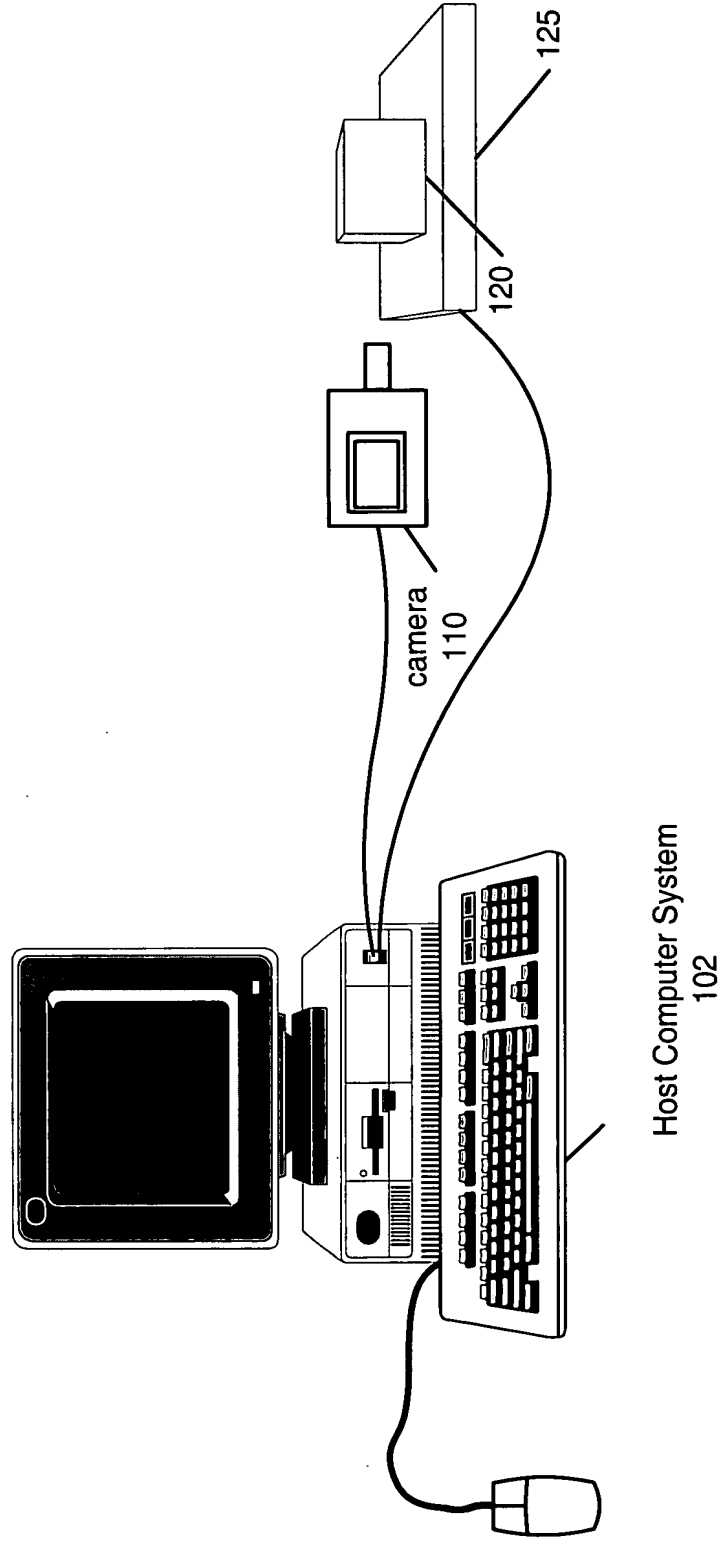


Figure 2A

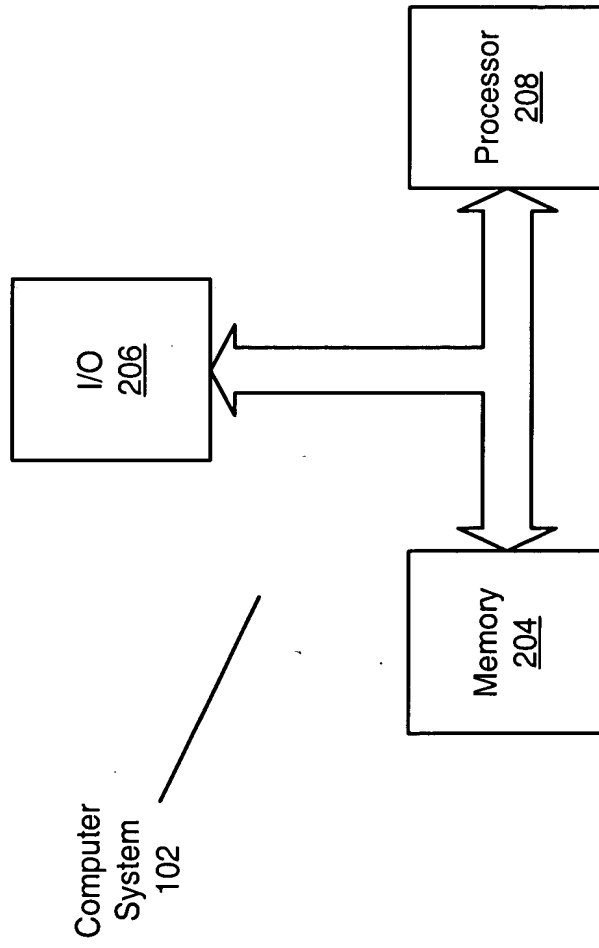


Figure 2B

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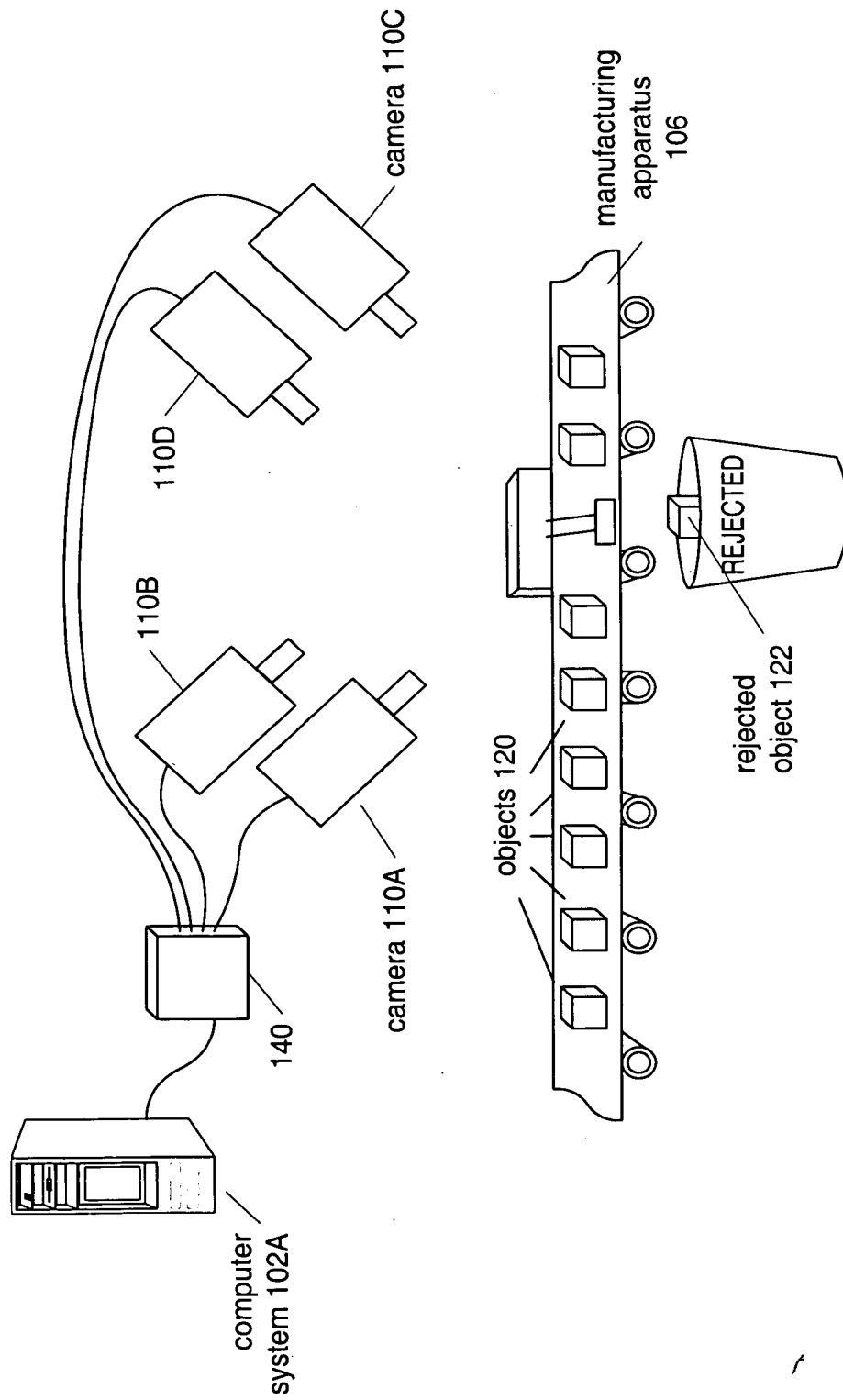


Figure 3A

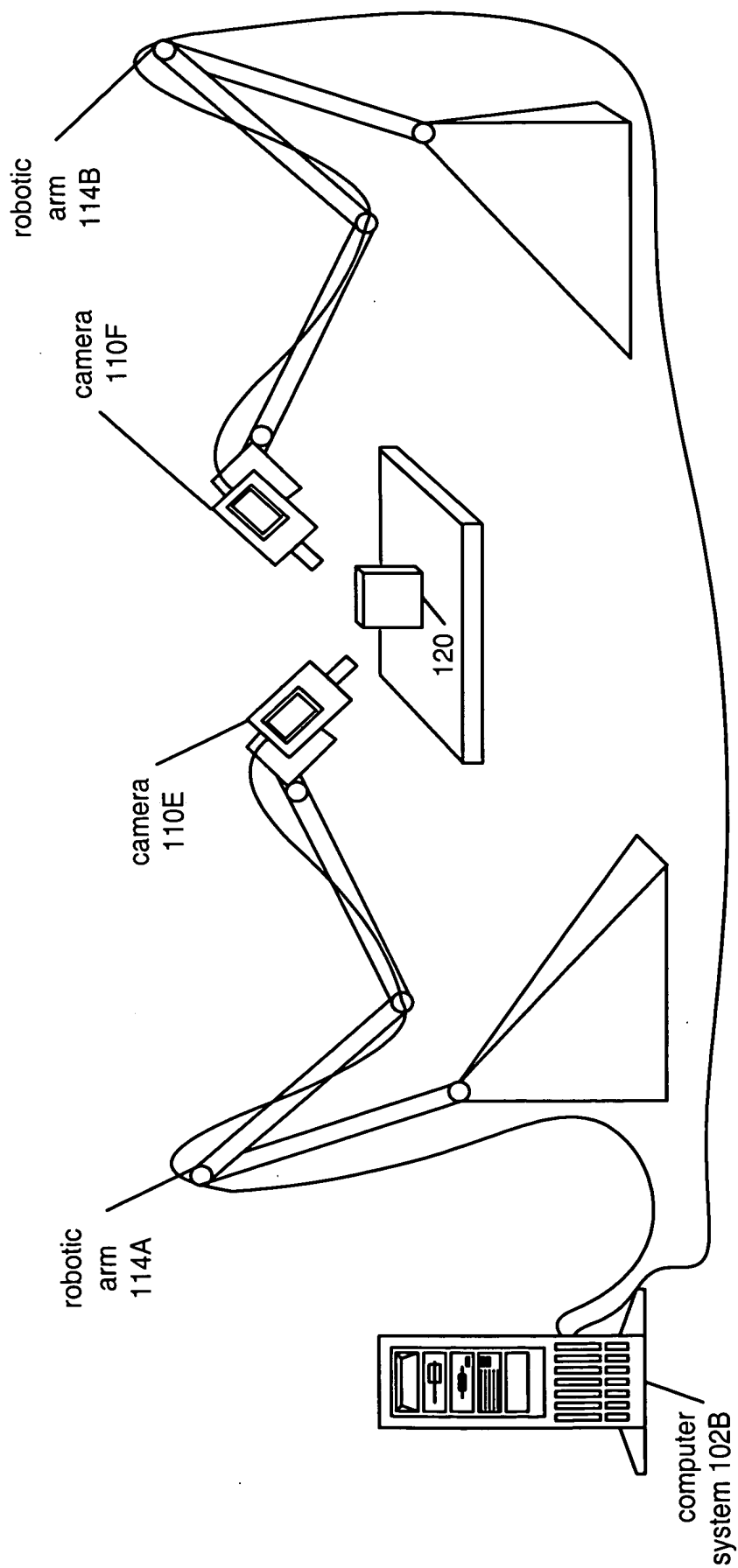


Figure 3B

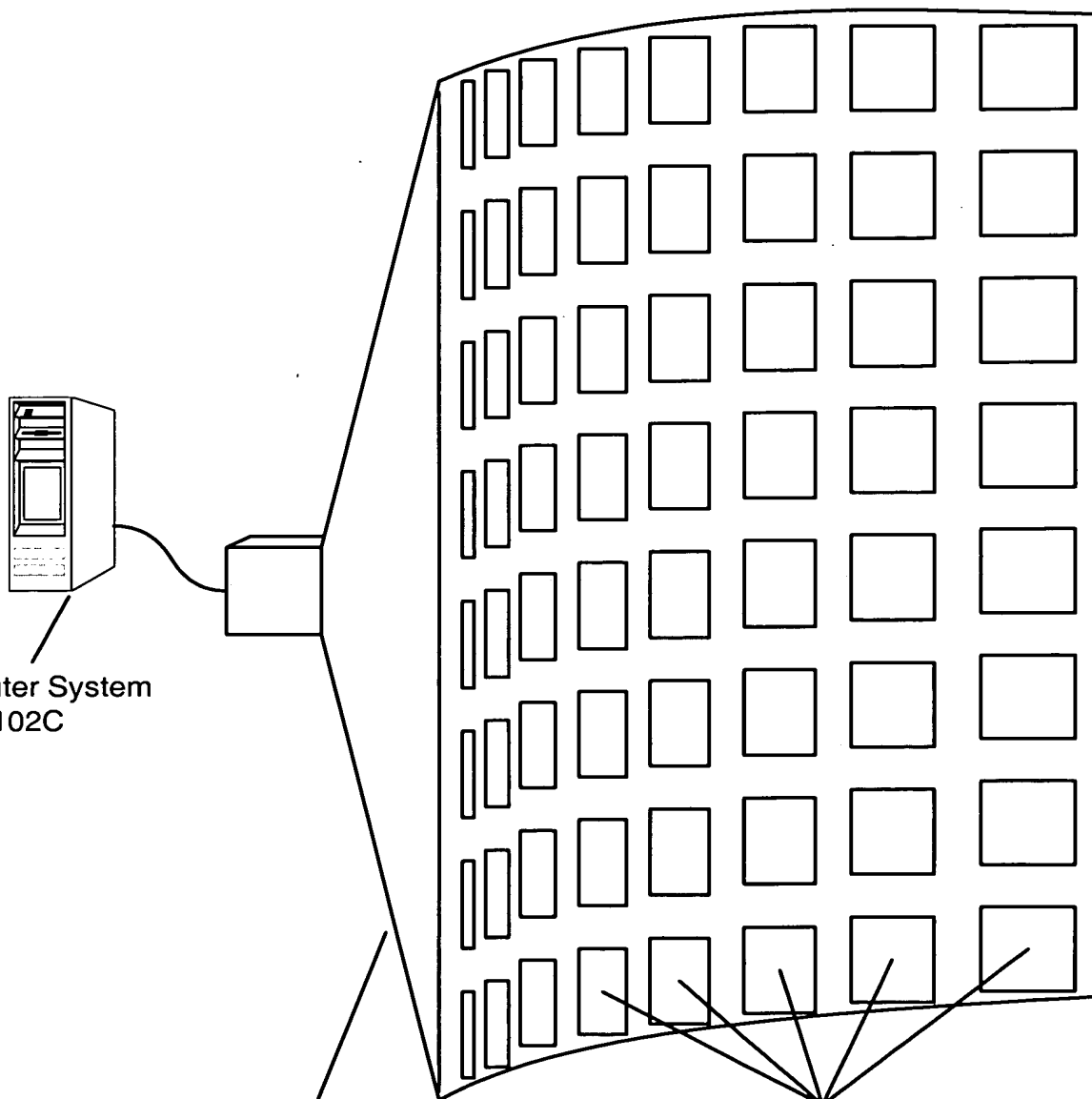
0997697 660801  
103090 22692650

Computer System  
102C

Phased Array  
306

Array Elements  
304

Figure 3C



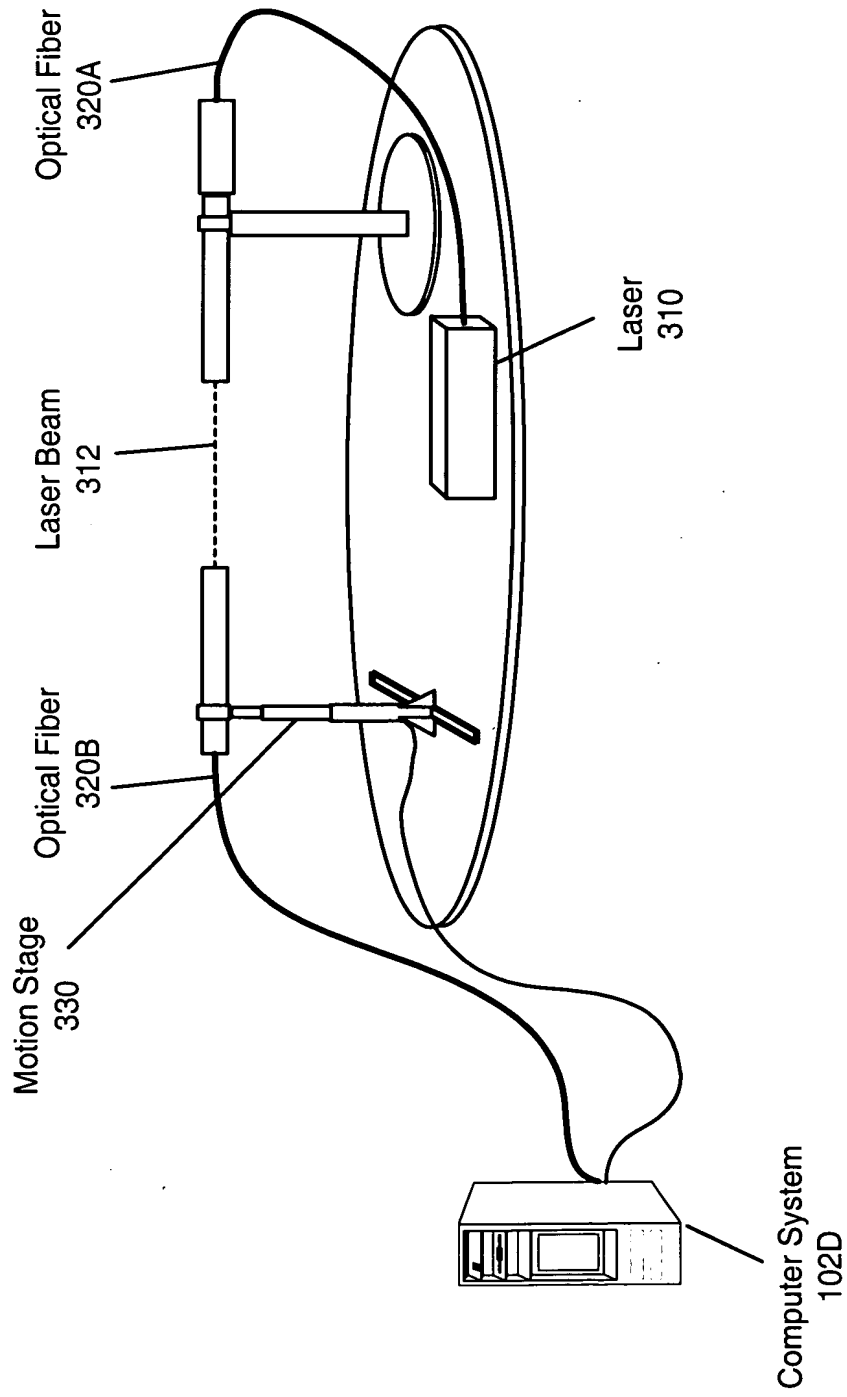
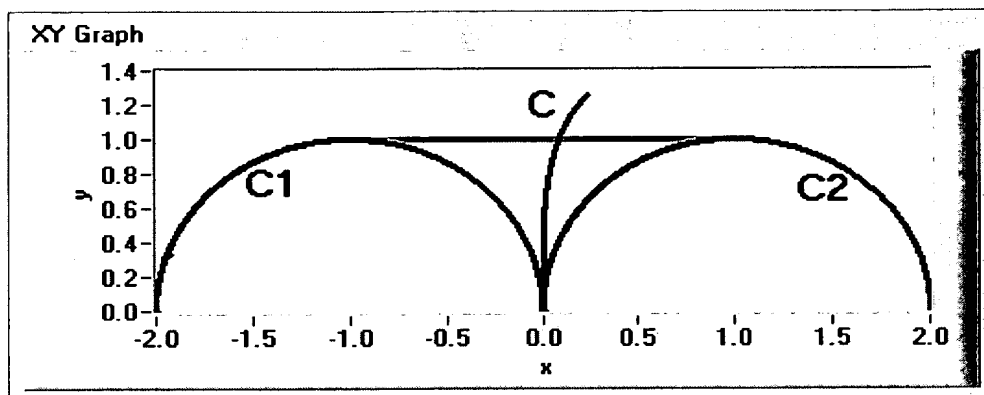
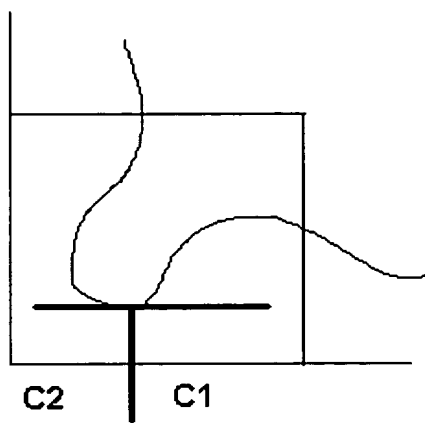


Figure 3D



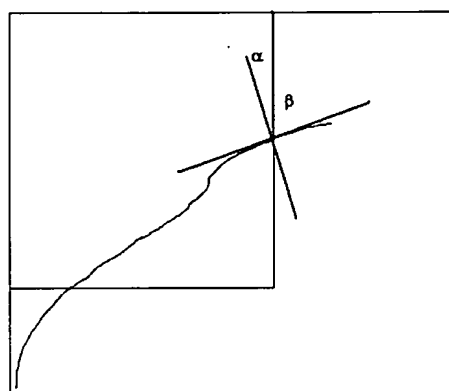
The situation of Lemma 1

Figure 4A



Case (A)

Figure 4B

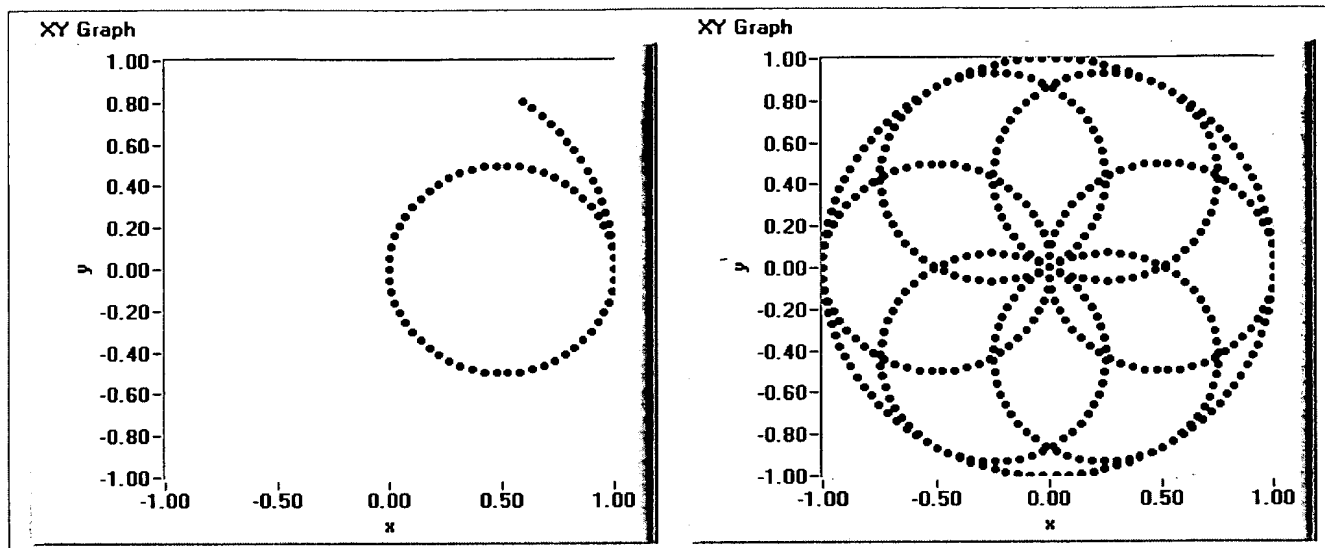


Case (B)

Figure 4C

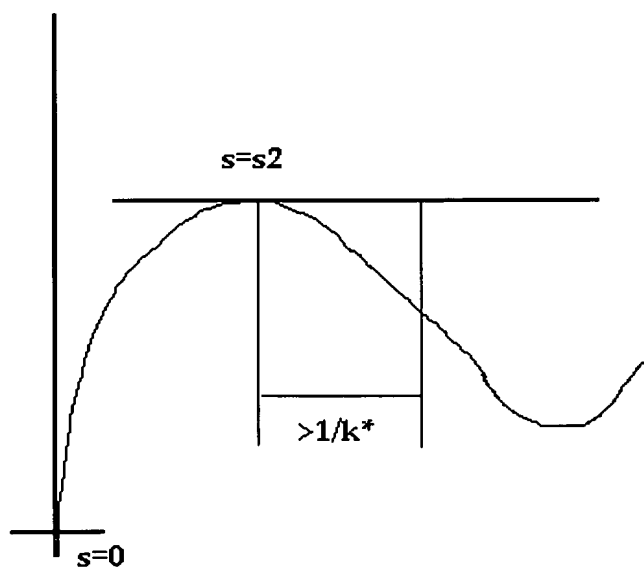






Beginning (left) and completion (right) of a scanning scheme where the curvature is below a certain value

Figure 5A

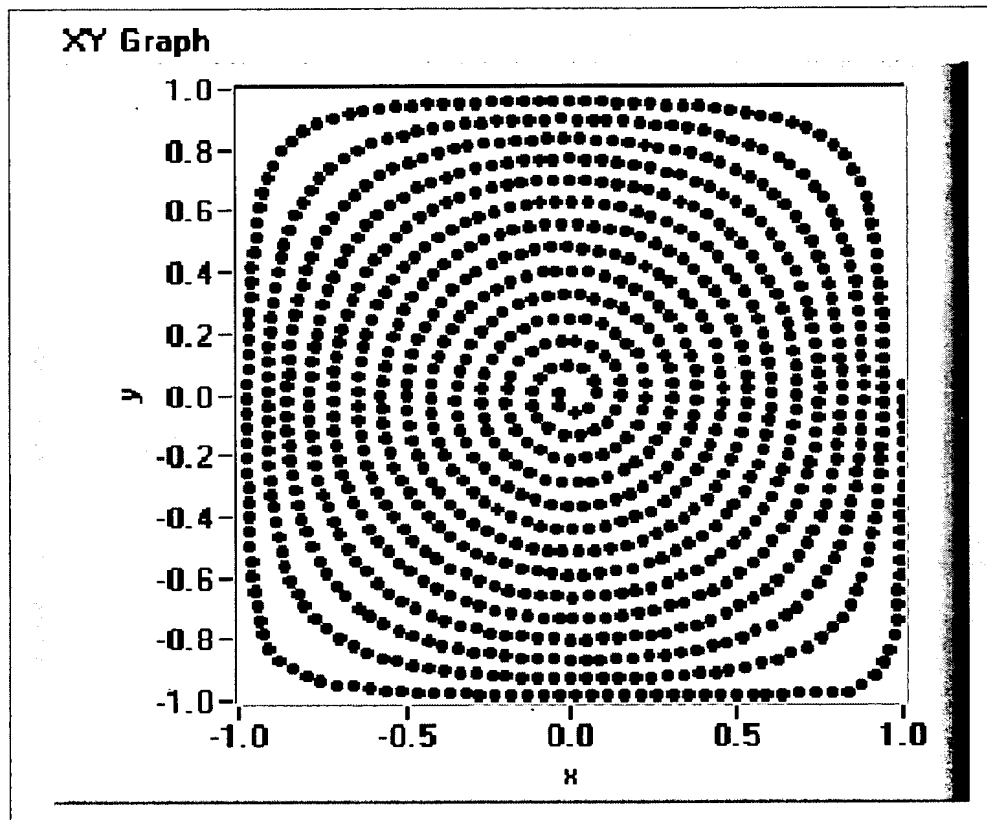


Construction of  $s_2$  and the subsequent part of the curve

Figure 5B

FD3030 22052860

09875977.060804



Conformal Spiral.

Figure 6

105090 24592663

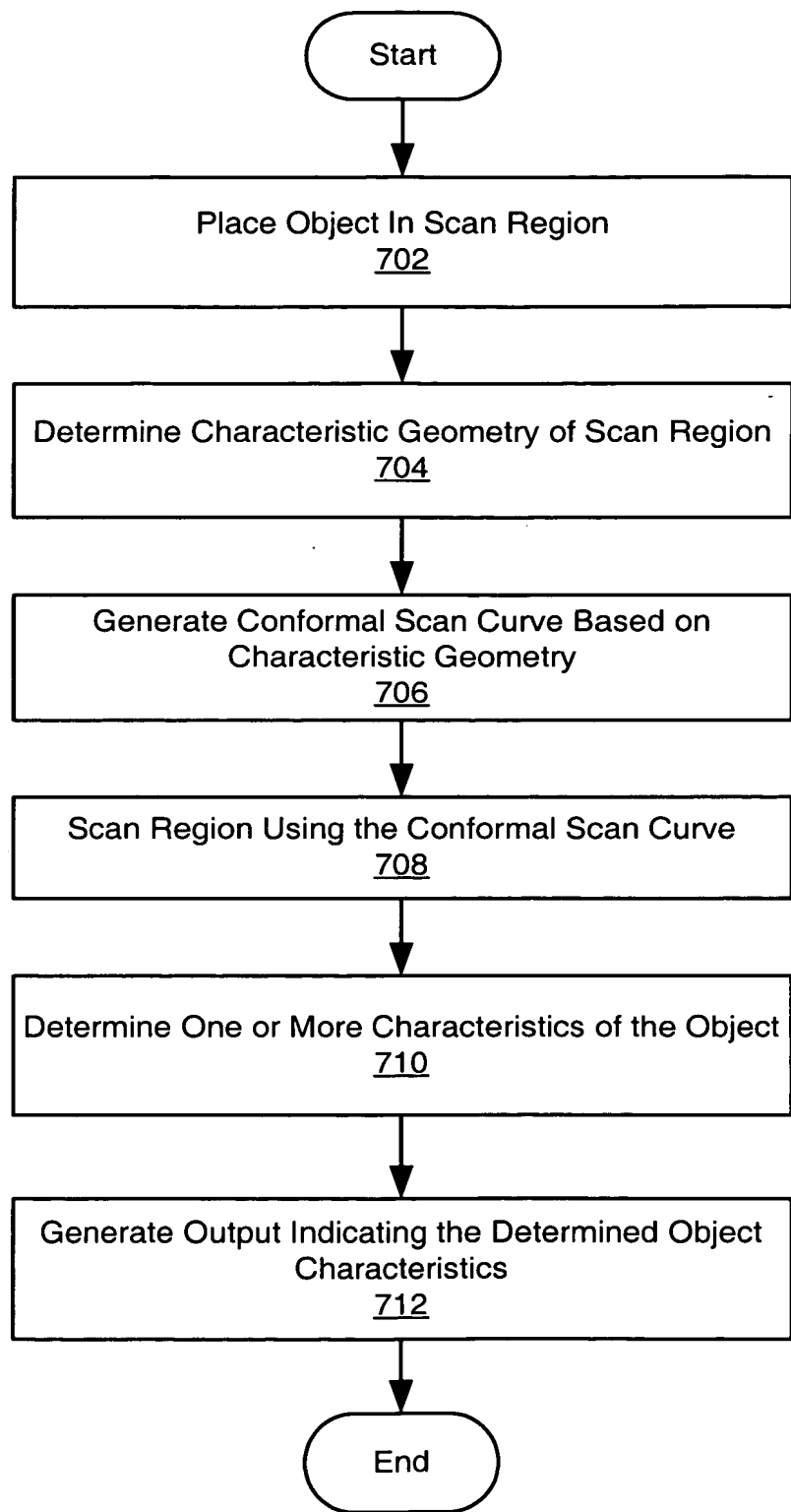


Figure 07



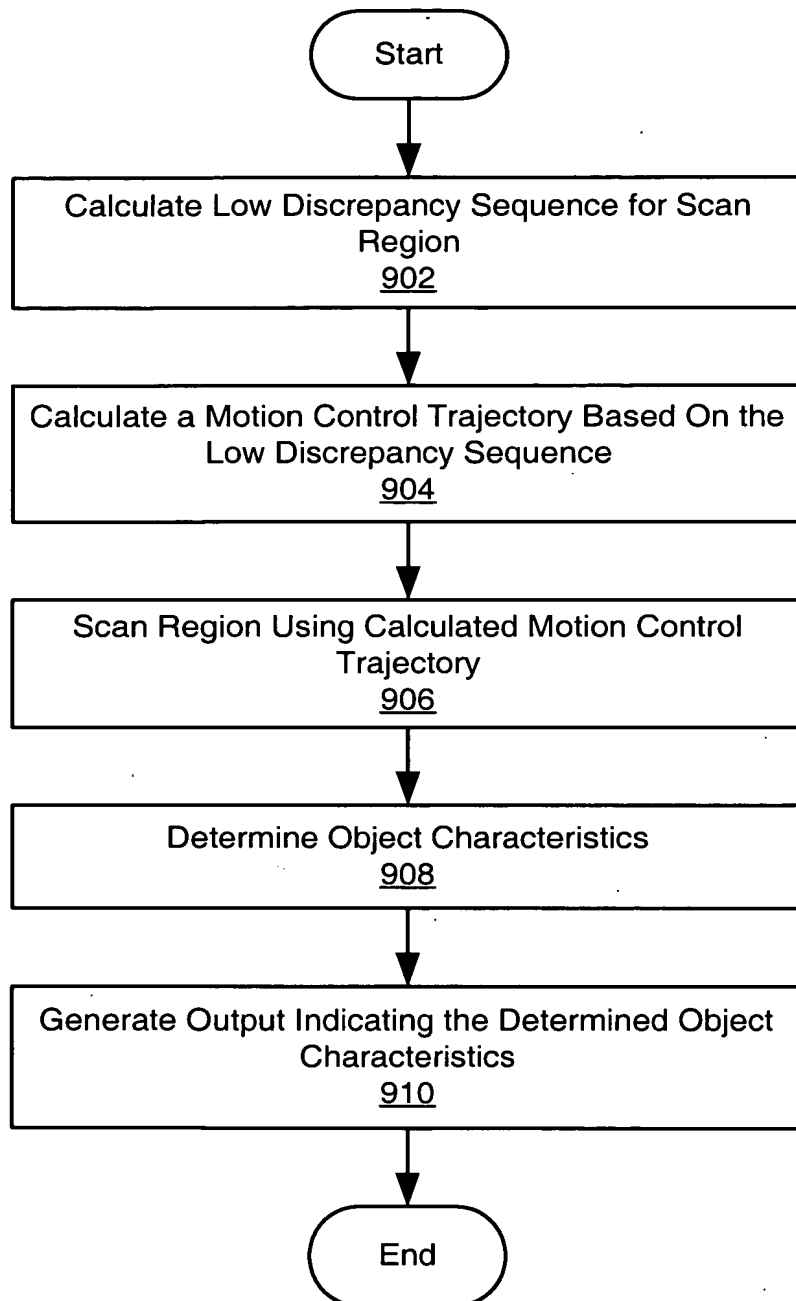
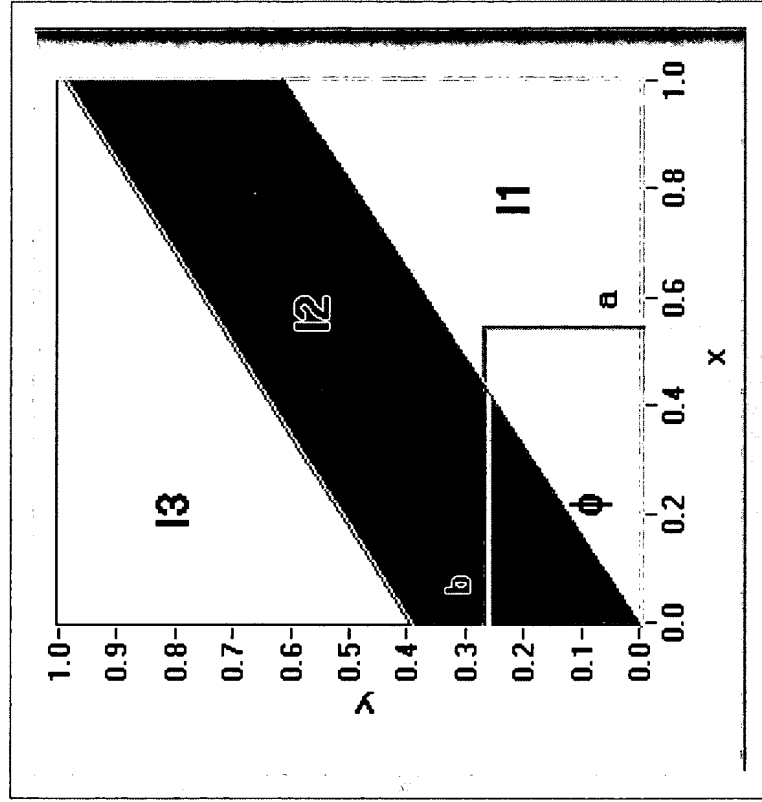


Figure 9

FD-302 (Rev. 11-27-60)



Definition of  $I_1$ ,  $I_2$ , and  $I_3$

Figure 10

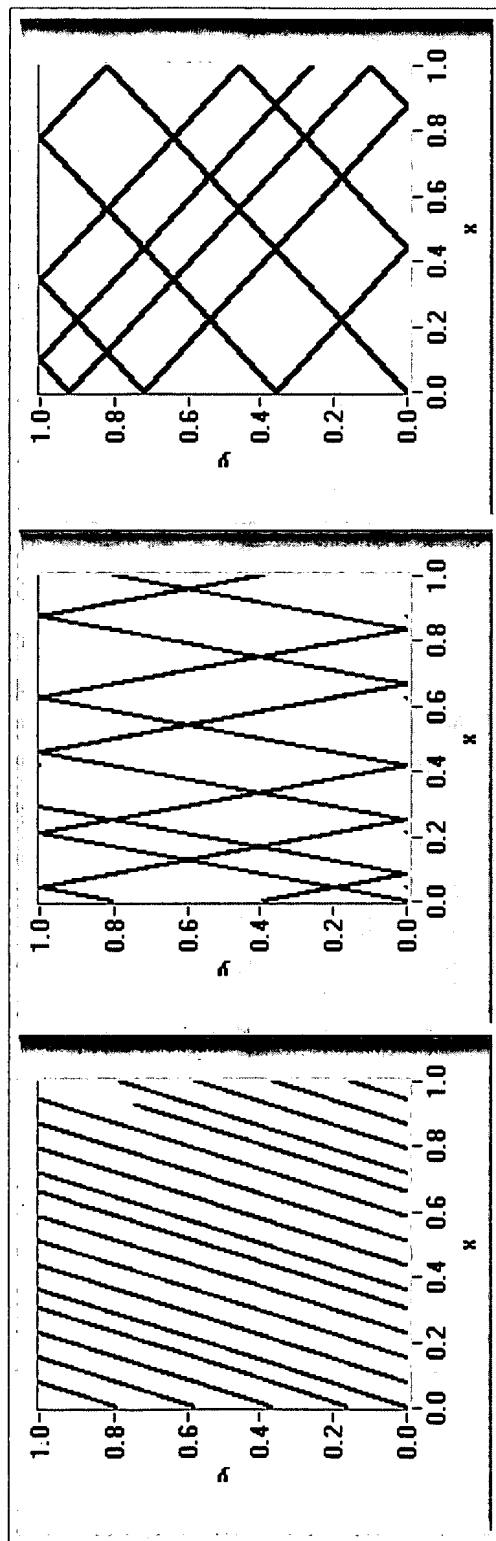


Figure 11A

Figure 11B

Figure 11C



FIGURE 12A

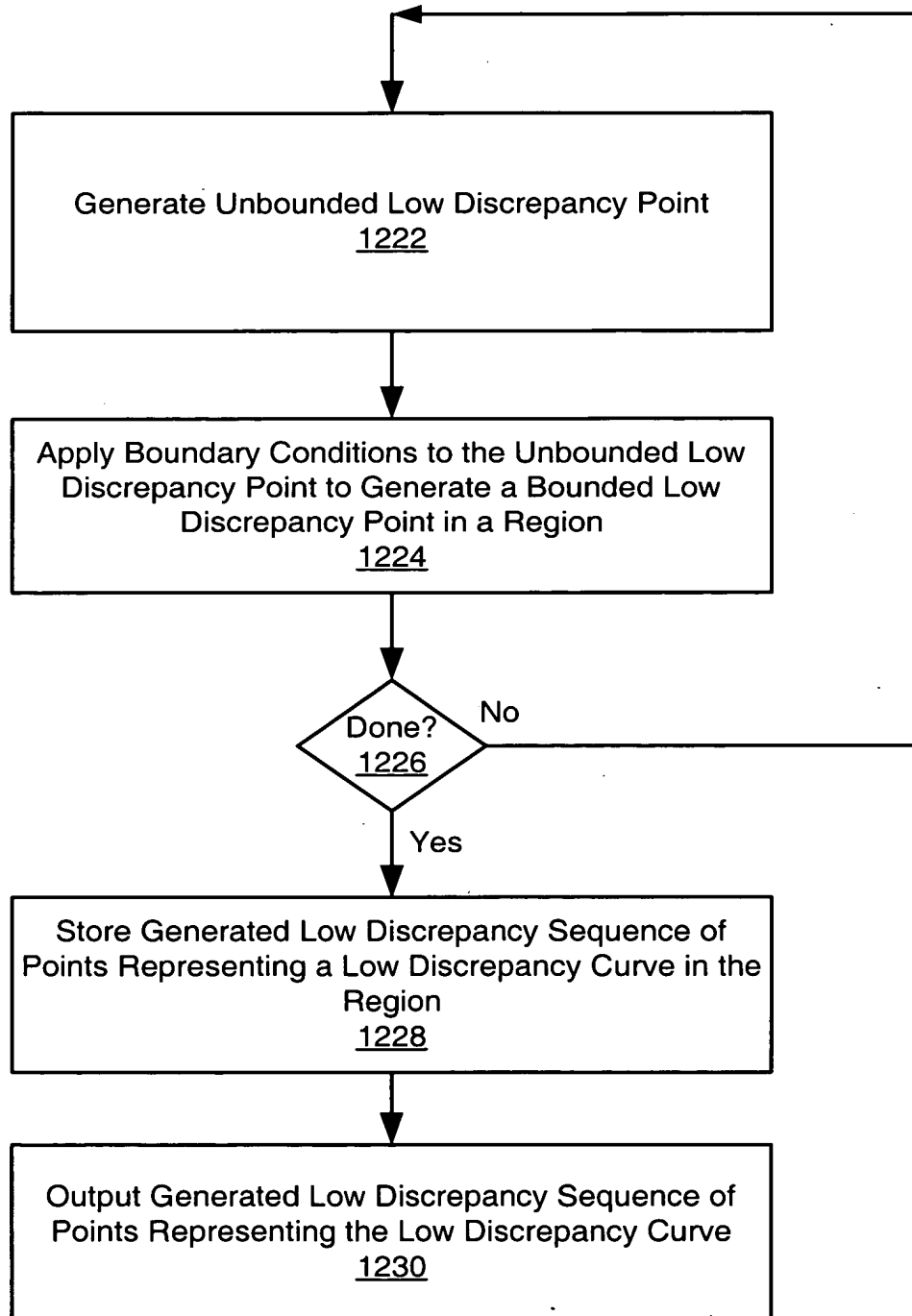


Figure 12A

Select a Pair of Irrational Numbers ( $\alpha_1, \alpha_2$ ) such that the Sequence  $\{(n \cdot \alpha_1) \bmod 1\}, \{(n \cdot \alpha_2) \bmod 1\}$  for all Natural Numbers  $n$  is a LDS in the Unit Square.

1202



### Select a Length, $L$ , and a Step Rate, $\epsilon$ , of the LD Curve in the Unit Square

1204



Initialize Current Length,  $l$ , to Zero, and Initialize Current Position  $(x, y)$ , (e.g., to  $(0,0)$ )

1206



**Increment  $x$  and  $y$  and Apply Boundary Conditions at Borders of Unit Square (e.g., Toroidal, Reflectance, or Both), Generating a Low Discrepancy Sequence Point  $(x_n, y_n)$**

1208

 $I < L?$ 

1210

No



### Output Generated Low Discrepancy Sequence of Points Representing the Low Discrepancy Curve

1212

Figure 12B

Figure 13A.

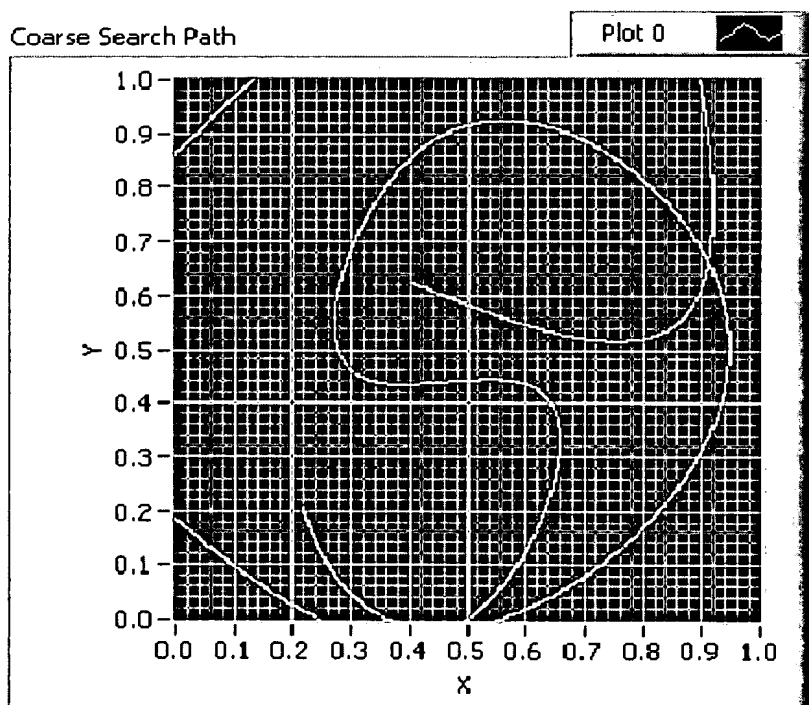
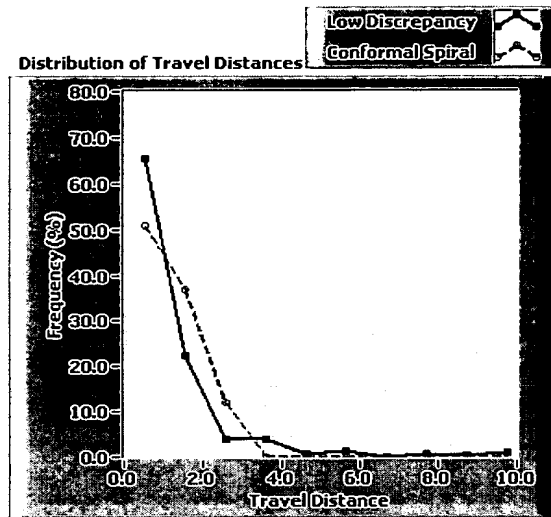


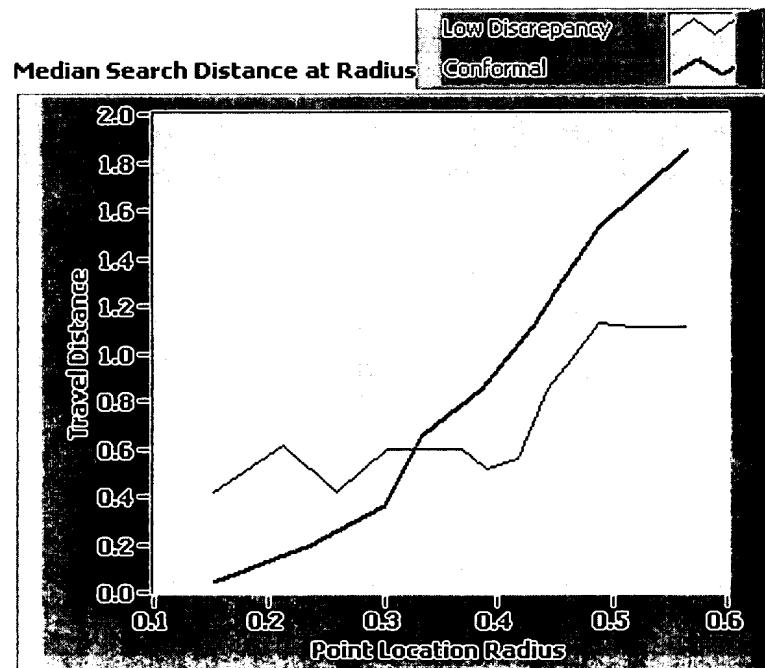
Figure 13B

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Comparison of Conformal Spiral and Low Discrepancy Searching

Figure 13C



Comparison of Travel Distance for Low Discrepancy Search and Conformal Spiral Search

Figure 13D

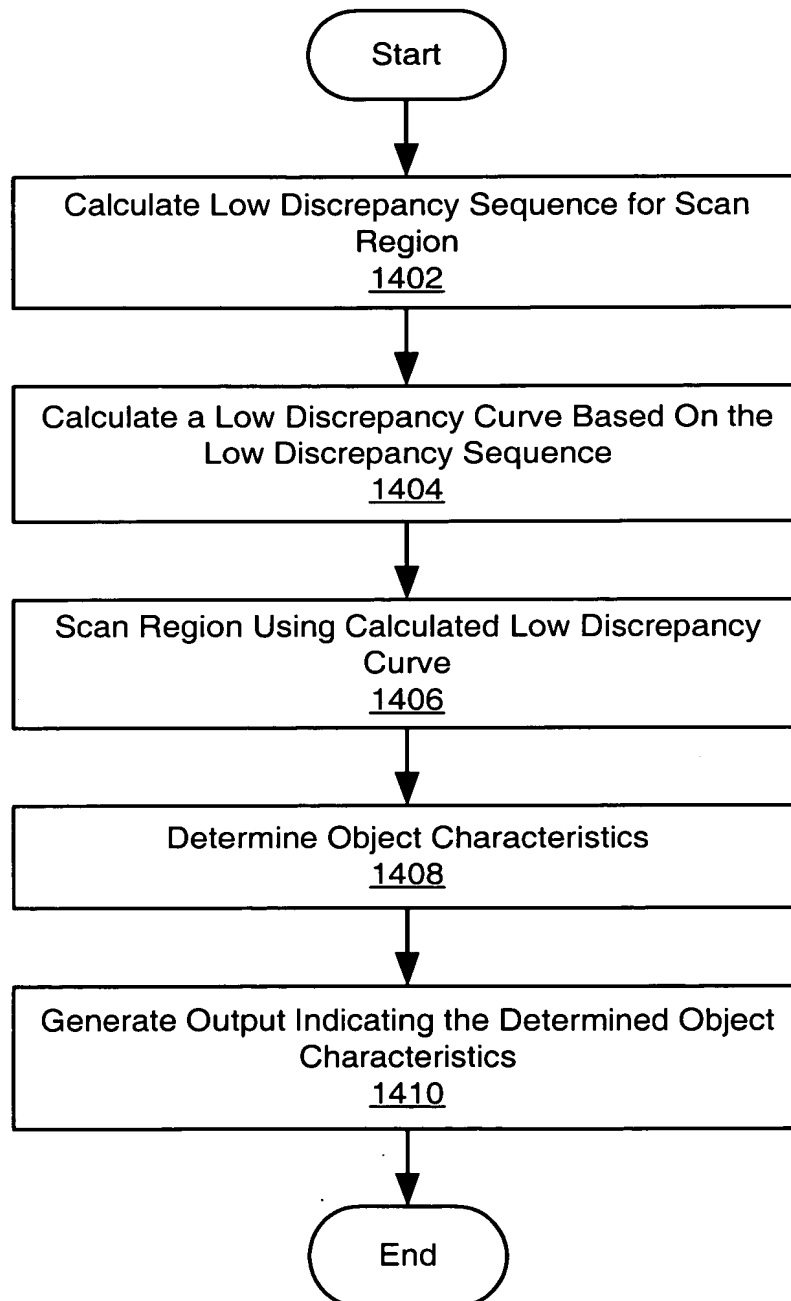
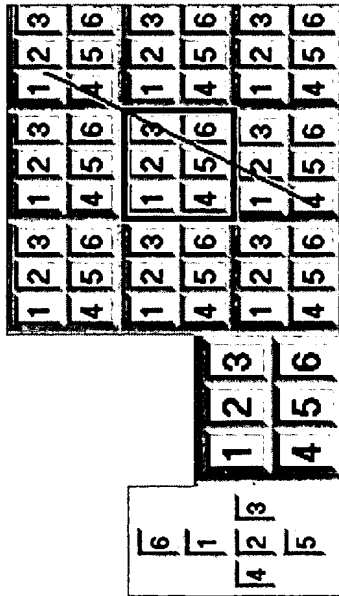


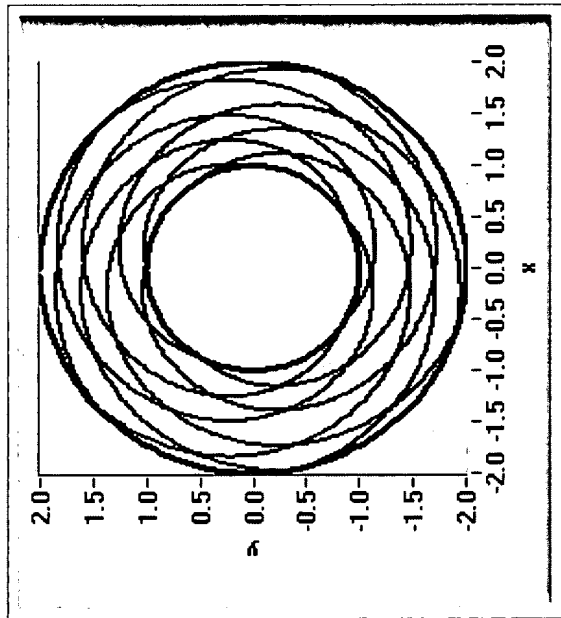
Figure 14

108080" 22692360



Tiling of the plane and relation to the surface of the unit cube

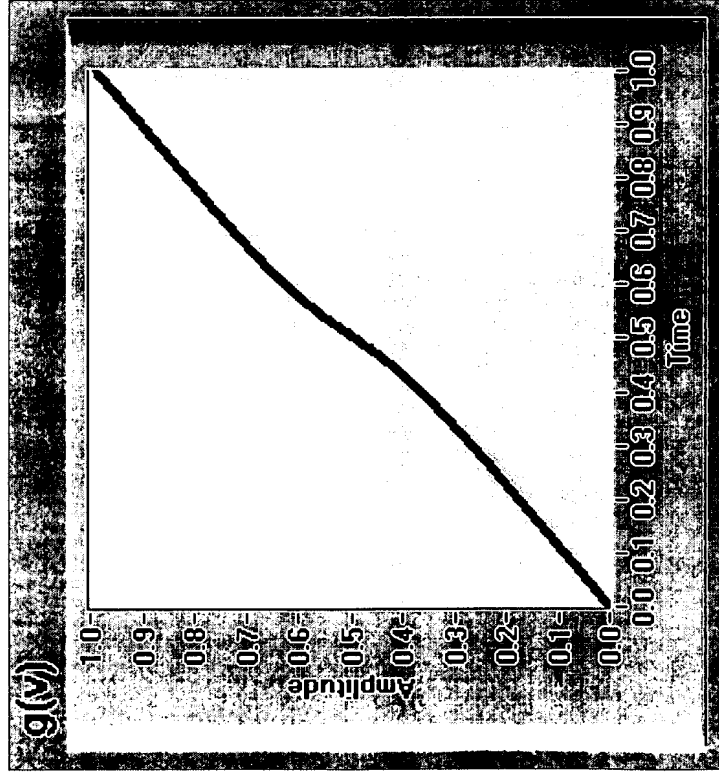
Figure 15A



Low-discrepancy curve in a ring

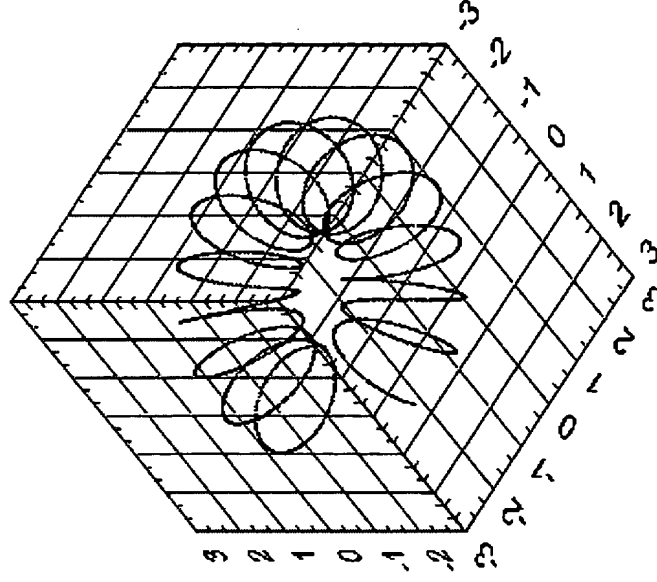
Figure 15B

708030" 44694800



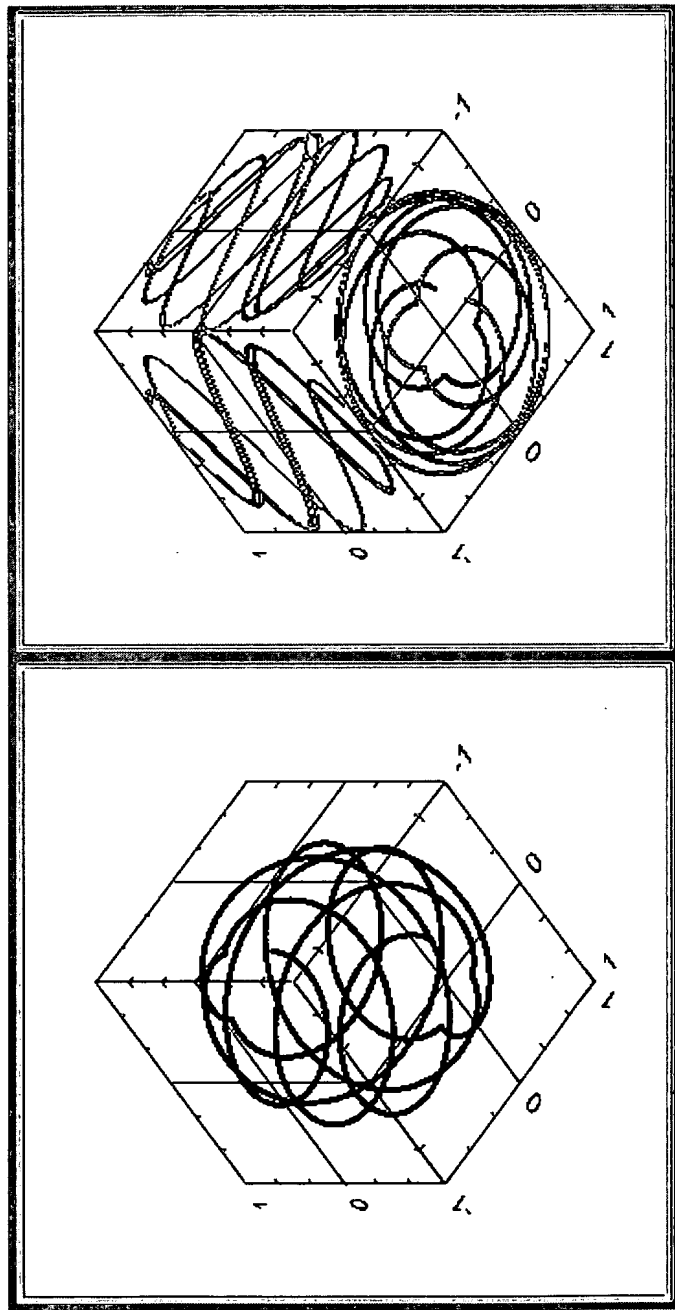
Low Discrepancy Preserving Mapping Function

Figure 15C



Low-discrepancy curve filling the surface of a torus

Figure 15D



Low-discrepancy curve on a sphere  
(left) and projections (right)

Figure 16



108090 27652860

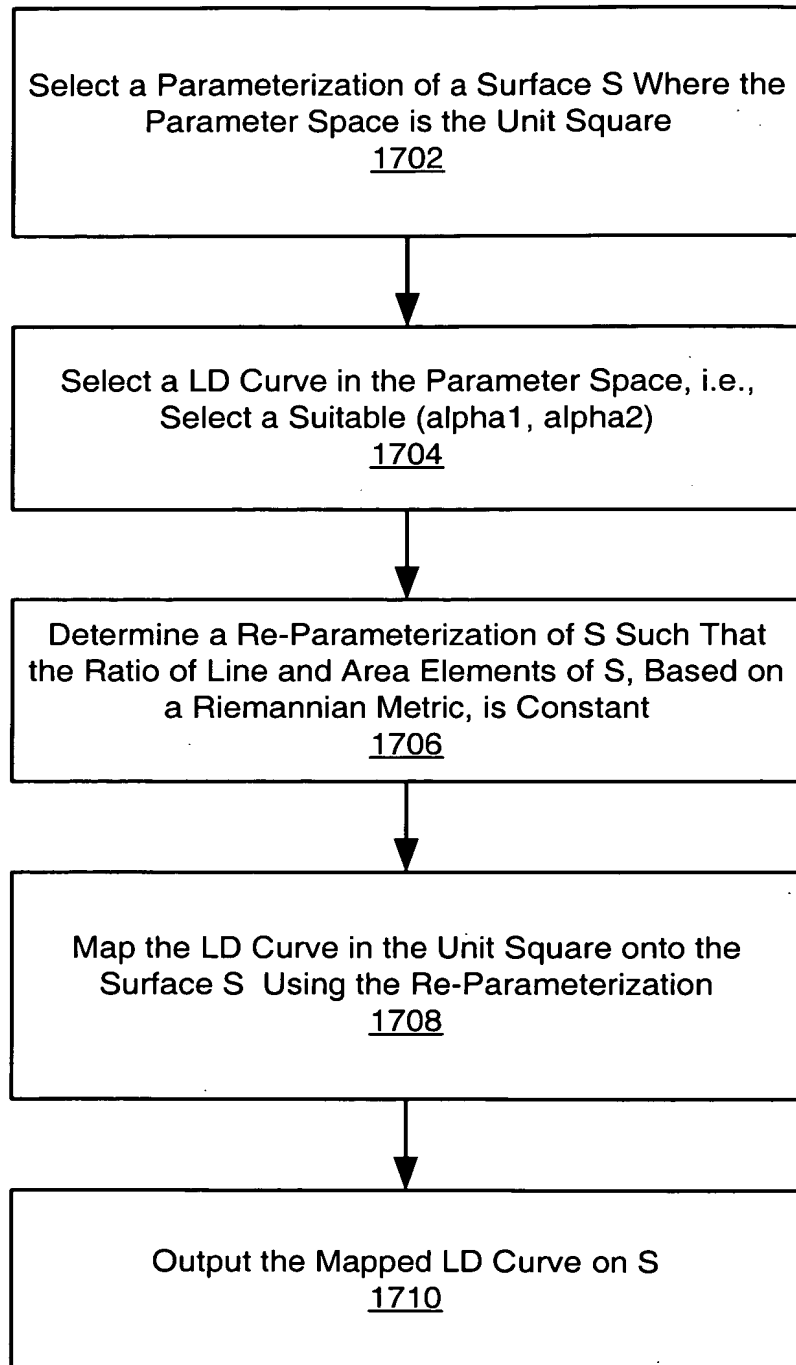
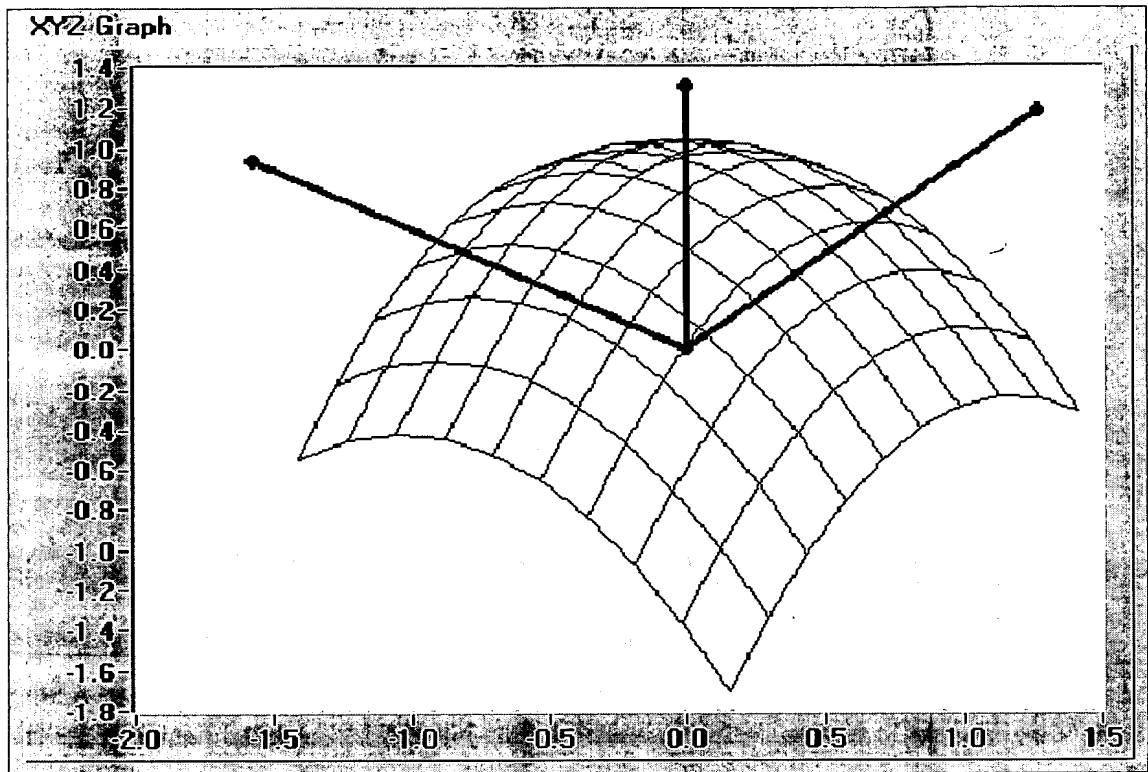


Figure 17

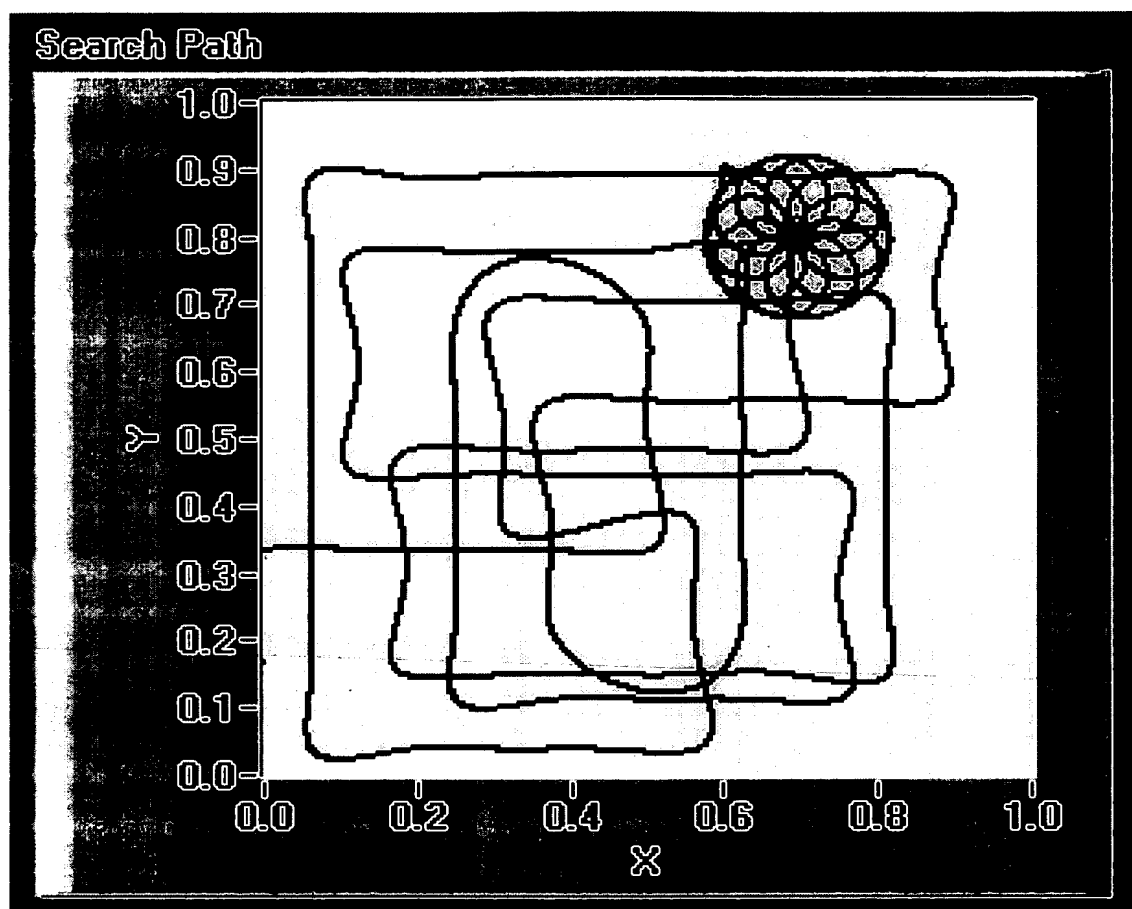
09876977-060801



Surfaces can be scanned efficiently when the term low discrepancy sequence/ curve can be generalized, e.g. based on metrics on the surface.

Figure 18

09876977.060804

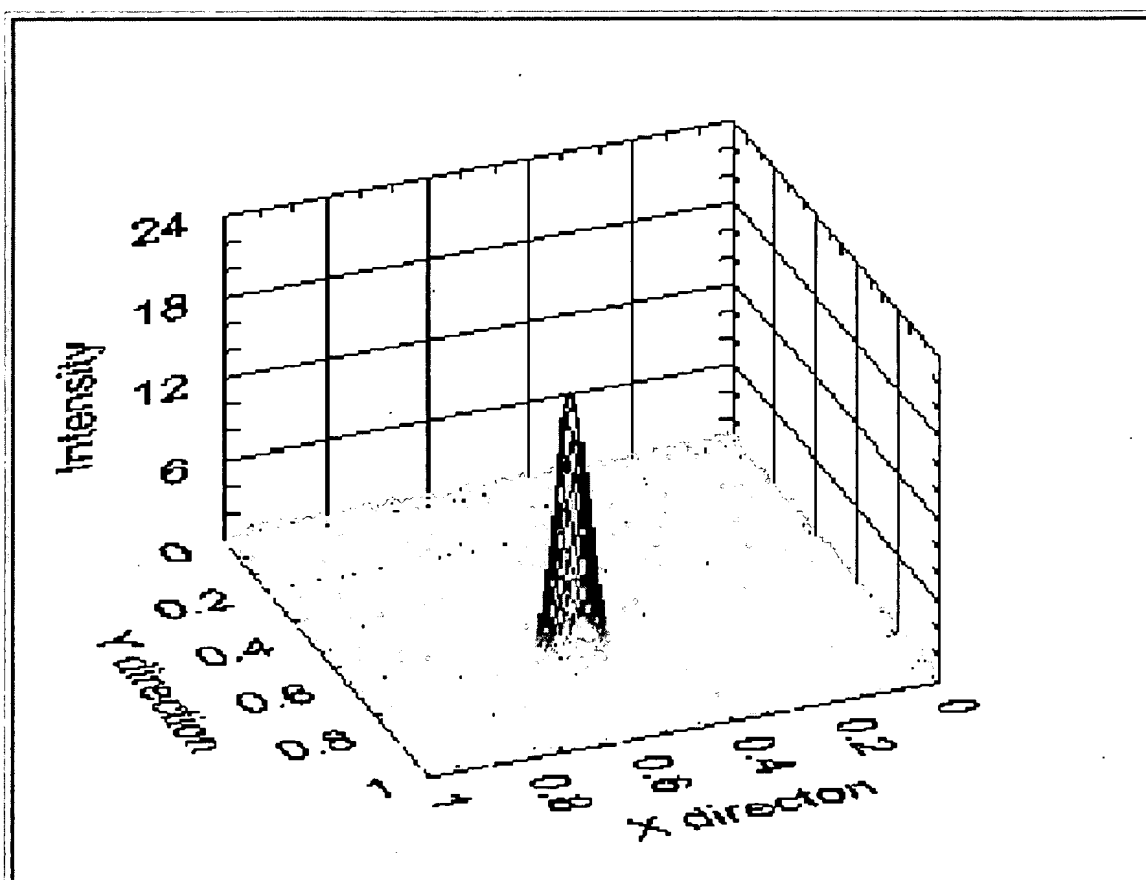


Splined Low Discrepancy Curve coarse search with refined final approach

Figure 19

09876577.060801

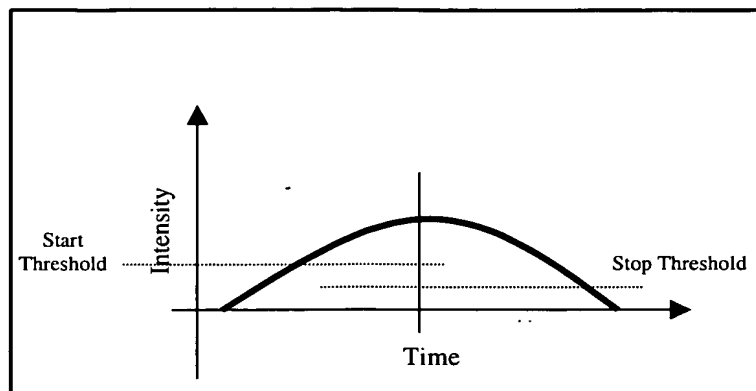
### Intensity Field Distribution in Search Area



Beam intensity distribution in search area

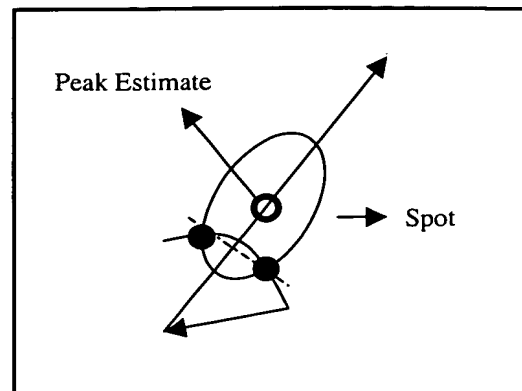
Figure 20

09876977-060801  
T08090-22692860



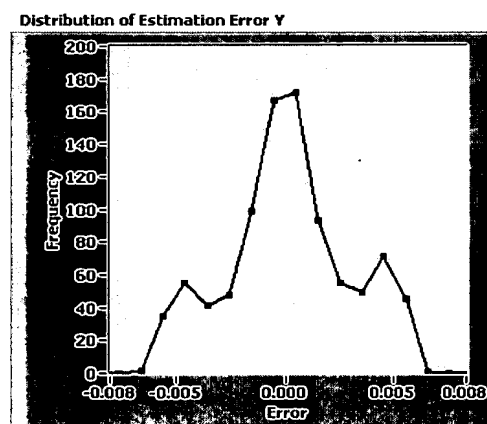
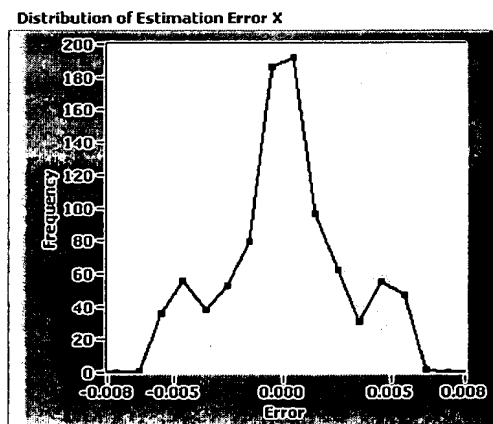
Location of the Peak

Figure 21A



Initial Final Approach Move

Figure 21B



Error distribution of the estimated peak X coordinate error (left) and Y coordinate error (right)

Figure 21C

09876977-060801

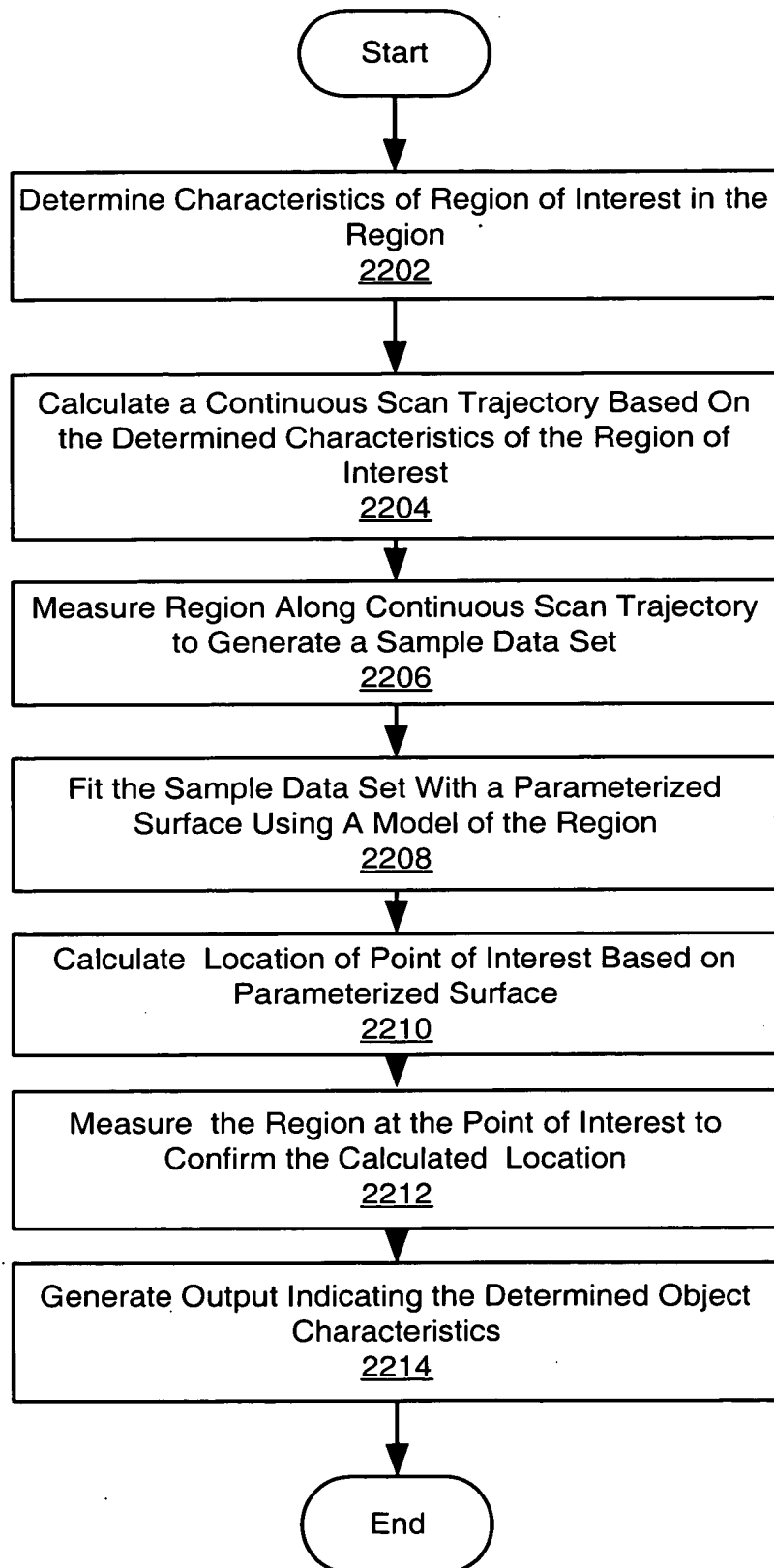


Figure 22

09376977-350801  
T08093 22992860

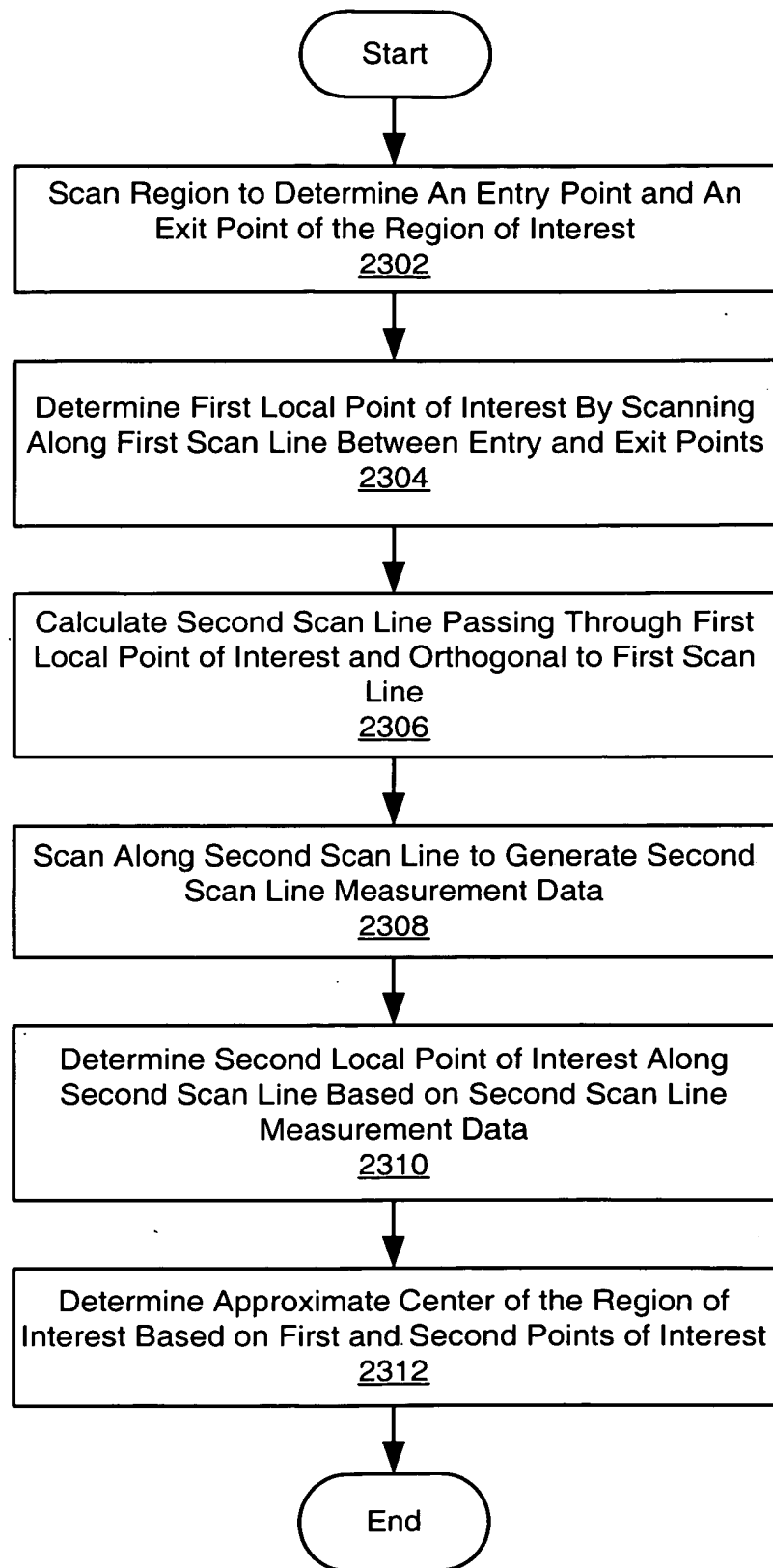


Figure 23

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